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AUK Semiconductor

S78Lxx

Positive-Voltage Regulators

Descriptions

This series of fixed-voltage monolithic integrated-circuit voltage regulators is designed for a wide range of applications. These applications include on-card regulation for elimination of Noise and distribution problems associated with single-point regulation. In addition, they can be used with power-pass elements to make high-current voltage regulators. Each of These regulators can deliver up to 100mA of output current. The internal limiting and thermal shutdown features of these regulators make them essentially immune to overload. When used as a replacement for a Zener diode-resistor combination, on effective improvement in output impedance can be obtained together with lover-bias current.

Features

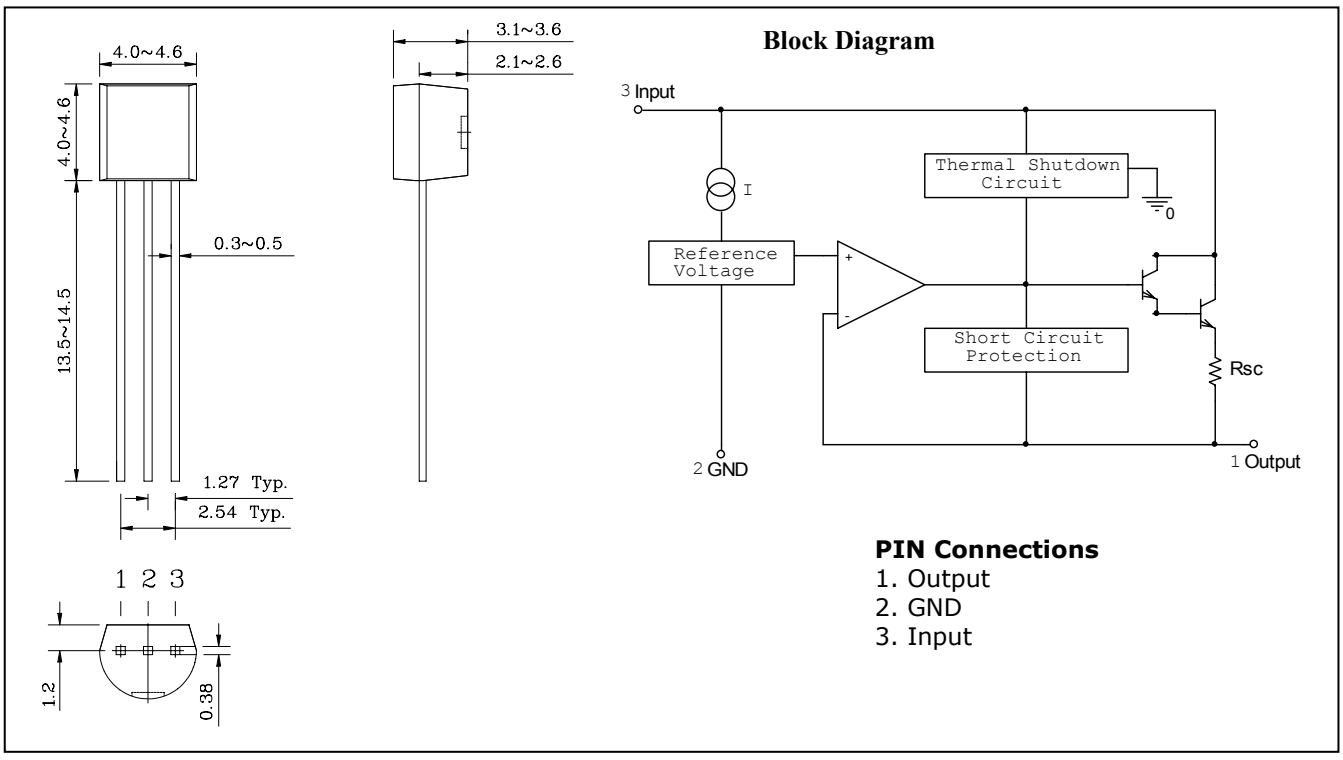
- 3-Terminal Regulators
- Output Current Up to 100mA
- No External Components
- Internal Thermal Overload Protection
- Internal Short-Circuit Limiting

Ordering Information

Type NO.	Marking	Package Code
S78Lxx	S78Lxx	TO-92

Outline Dimensions

unit : mm



PIN Connections

1. Output
2. GND
3. Input

Absolute maximum ratings (Ta=25°C)

Characteristics	Symbol	Ratings		Unit
Operating Input Voltage	V_{IN}	S78L05 Thru S78L10	30	V
		S78L12 Thru S78L18	35	
		S78L24	40	
Power Dissipation	P_D	625		㎽
Operating Temperature Range	T_{OPR}	-40 ~ +85		℃
Junction Temperature	T_J	150		℃
Storage Temperature Range	T_{STG}	-55 ~ +150		℃
Lead Temperature Time	T_{SOL}	260 (10sec)		℃

Recommended operating conditions

Parameter		Min.	Max.	Unit
Input Voltage, V_I	S78L05	7	20	V
	S78L06	8	20	
	S78L08	10.5	23	
	S78L09	11.5	24	
	S78L10	12.5	25	
	S78L12	14.5	27	
	S78L15	17.5	30	
	S78L18	20.5	33	
	S78L24	26.5	39	
Output current, I_O			100	mA

S78L05 Electrical Characteristics

(V_I=10V, I_O=40 ㎃, T_J=0℃ ~ 125℃, Unless otherwise noted)

Parameter	Test Conditions*		S78L05			Unit
			Min.	Typ.	Max.	
Output Voltage**		25℃	4.8	5	5.2	V
	I_O=1mA to 40mA V_I=7V to 20V	0℃ to 125℃	4.75	5	5.25	
	I_O=1mA to 70mA		4.75	5	5.25	
Input regulation	V_I=7V to 20V	25℃		32	150	mV
	V_I=8V to 20V			26	100	
Ripple rejection	V_I=8V to 18V, f=120Hz	0℃ to 25℃	41	49		dB
Output regulation	I_O=1mA to 100mA	25℃		15	60	mV
	I_O=1mA to 40mA			8	30	
Output noise voltage	f=10Hz to 100KHz	25℃		42		uV
Dropout Voltage		25℃		1.7		V
Bias current		25℃		3.8	6	mA
		125℃			5.5	
Bias Current Change	V_I=8V to 20V	0℃ to 125℃			1.5	
	I_O=1mA to 40mA				0.1	

S78L06 Electrical Characteristics

(V_I=11V, I_O=40 ㎃, T_J=0℃ ~1 25℃, Unless otherwise noted)

Parameter	Test Conditions*		S78L06			Unit
			Min.	Typ.	Max.	
Output Voltage**		25℃	5.75	6	6.25	V
	I_O=1mA to 40mA V_I=8V to 20V	0℃ to 125℃	5.7	6	6.3	
	I_O=1mA to 70mA		5.7	6	6.3	
Input regulation	V_I=8V to 20V	25℃		35	175	mV
	V_I=9V to 20V			29	125	
Ripple rejection	V_I=9V to 19V, f=120Hz	0℃ to 25℃	40	48		dB
Output regulation	I_O=1mA to 100mA	25℃		16	80	mV
	I_O=1mA to 40mA			9	40	
Output noise voltage	f=10Hz to 100KHz	25℃		46		uV
Dropout Voltage		25℃		1.7		V
Bias current		25℃		3.9	6	mA
		125℃			5.5	
Bias Current Change	V_I=9V to 20V	0℃ to 125℃			1.5	
	I_O=1mA to 40mA				0.1	

* Pulse testing techniques are used to maintain the junction temperature as close to the ambient temperature as possible. Thermal effects must be taken into account separately. All characteristics are measured with a 0.33uF capacitor across the input and a 0.1uF capacitor across the output.

** This specification applies only for dc power dissipation permitted by absolute maximum ratings.

S78L08 Electrical Characteristics

(V_I=14V, I_O=40 ㎃, T_J=0℃ ~ 125℃, Unless otherwise noted)

Parameter	Test Conditions*		S78L08			Unit
			Min.	Typ.	Max.	
Output Voltage**		25℃	7.7	8	8.3	V
	I_O=1mA to 40mA V_I=10.5V to 23V	0℃ to 125℃	7.6	8	8.4	
	I_O=1mA to 70mA		7.6	8	8.4	
Input regulation	V_I=10.5V to 23V	25℃		42	175	mV
	V_I=11V to 23V			36	125	
Ripple rejection	V_I=13V to 23V, f=120Hz	0℃ to 25℃	37	46		dB
Output regulation	I_O=1mA to 100mA	25℃		18	80	mV
	I_O=1mA to 40mA			10	40	
Output noise voltage	f=10Hz to 100KHz	25℃		54		uV
Dropout Voltage		25℃		1.7		V
Bias current		25℃		4	6	mA
		125℃			5.5	
Bias Current Change	V_I=11V to 23V	0℃ to 125℃			1.5	
	I_O=1mA to 40mA				0.1	

S78L09 Electrical Characteristics

(V_I=16V, I_O=40 ㎃, T_J=0℃ ~ 125℃, Unless otherwise noted)

Parameter	Test Conditions*		S78L09			Unit
			Min.	Typ.	Max.	
Output Voltage**		25℃	8.6	9	9.4	V
	I_O=1mA to 40mA V_I=12V to 24V	0℃ to 125℃	8.55	9	9.45	
	I_O=1mA to 70mA		8.55	9	9.45	
Input regulation	V_I=12V to 24V	25℃		45	175	mV
	V_I=13V to 24V			40	125	
Ripple rejection	V_I=15V to 25V, f=120Hz	0℃ to 25℃	38	45		dB
Output regulation	I_O=1mA to 100mA	25℃		19	90	mV
	I_O=1mA to 40mA			11	40	
Output noise voltage	f=10Hz to 100KHz	25℃		58		uV
Dropout Voltage		25℃		1.7		V
Bias current		25℃		4.1	6	mA
		125℃			5.5	
Bias Current Change	V_I=13V to 24V	0℃ to 125℃			1.5	
	I_O=1mA to 40mA				0.1	

* Pulse testing techniques are used to maintain the junction temperature as close to the ambient temperature as possible. Thermal effects must be taken into account separately. All characteristics are measured with a 0.33uF capacitor across the input and a 0.1uF capacitor across the output.

** This specification applies only for dc power dissipation permitted by absolute maximum ratings.

S78L10 Electrical Characteristics

(V_I=17V, I_O=40 ㎃, T_J=0℃ ~ 125℃, Unless otherwise noted)

Parameter	Test Conditions*		S78L10			Unit
			Min.	Typ.	Max.	
Output Voltage**		25℃	9.6	10	10.4	V
	I_O=1mA to 40mA V_I=13V to 25V	0℃ to 125℃	9.5	10	10.5	
	I_O=1mA to 70mA		9.5	10	10.5	
Input regulation	V_I=13V to 25V	25℃		51	175	mV
	V_I=14V to 25V			42	125	
Ripple rejection	V_I=15V to 25V, f=120Hz	0℃ to 25℃	37	44		dB
Output regulation	I_O=1mA to 100mA	25℃		20	90	mV
	I_O=1mA to 40mA			11	40	
Output noise voltage	f=10Hz to 100KHz	25℃		62		uV
Dropout Voltage		25℃		1.7		V
Bias current		25℃		4.2	6	mA
		125℃			5.5	
Bias Current Change	V_I=14V to 25V	0℃ to 125℃			1.5	
	I_O=1mA to 40mA				0.1	

S78L12 Electrical Characteristics

(V_I=19V, I_O=40 ㎃, T_J=0℃ ~ 125℃, Unless otherwise noted)

Parameter	Test Conditions*		S78L12			Unit
			Min.	Typ.	Max.	
Output Voltage**		25℃	11.5	12	12.5	V
	I_O=1mA to 40mA V_I=14V to 27V	0℃ to 125℃	11.4	12	12.6	
	I_O=1mA to 70mA		11.4	12	12.6	
Input regulation	V_I=14.5V to 27V	25℃		55	250	mV
	V_I=16V to 27V			49	200	
Ripple rejection	V_I=15V to 25V, f=120Hz	0℃ to 25℃	37	42		dB
Output regulation	I_O=1mA to 100mA	25℃		22	100	mV
	I_O=1mA to 40mA			13	50	
Output noise voltage	f=10Hz to 100KHz	25℃		70		uV
Dropout Voltage		25℃		1.7		V
Bias current		25℃		4.3	6.5	mA
		125℃			6	
Bias Current Change	V_I=16V to 27V	0℃ to 125℃			1.5	
	I_O=1mA to 40mA				0.1	

* Pulse testing techniques are used to maintain the junction temperature as close to the ambient temperature as possible. Thermal effects must be taken into account separately. All characteristics are measured with a 0.33uF capacitor across the input and a 0.1uF capacitor across the output.

** This specification applies only for dc power dissipation permitted by absolute maximum ratings.

S78L15 Electrical Characteristics

(V_I=23V, I_O=40 ㎃, T_J=0℃ ~ 125℃, Unless otherwise noted)

Parameter	Test Conditions*		S78L15			Unit
			Min.	Typ.	Max.	
Output Voltage**		25℃	14.4	15	15.6	V
	I_O=1mA to 40mA V_I=17.5V to 30V	0℃ to 125℃	14.25	15	15.75	
	I_O=1mA to 70mA		14.25	15	15.75	
Input regulation	V_I=17.5V to 30V	25℃		65	300	mV
	V_I=19V to 30V			58	250	
Ripple rejection	V_I=18.5V to 28.5V, f=120Hz	0℃ to 25℃	34	39		dB
Output regulation	I_O=1mA to 100mA	25℃		25	150	mV
	I_O=1mA to 40mA			15	75	
Output noise voltage	f=10Hz to 100KHz	25℃		82		uV
Dropout Voltage		25℃		1.7		V
Bias current		25℃		4.6	6.5	mA
		125℃			6	
Bias Current Change	V_I=19V to 30V	0℃ to 125℃			1.5	
	I_O=1mA to 40mA				0.1	

S78L18 Electrical Characteristics

(V_I=26V, I_O=40 ㎃, T_J=0℃ ~ 125℃, Unless otherwise noted)

Parameter	Test Conditions*		S78L18			Unit
			Min.	Typ.	Max.	
Output Voltage**		25℃	17.3	18	18.7	V
	I_O=1mA to 40mA V_I=20.5V to 33V	0℃ to 125℃	17.1	18	18.9	
	I_O=1mA to 70mA		17.1	18	18.9	
Input regulation	V_I=20.5V to 33V	25℃		70	360	mV
	V_I=22V to 33V			64	300	
Ripple rejection	V_I=21.5V to 31.5V,f=120Hz	0℃ to 25℃	32	36		dB
Output regulation	I_O=1mA to 100mA	25℃		27	180	mV
	I_O=1mA to 40mA			19	90	
Output noise voltage	f=10Hz to 100KHz	25℃		89		uV
Dropout Voltage		25℃		1.7		V
Bias current		25℃		4.7	6.5	mA
		125℃			6	
Bias Current Change	V_I=22V to 33V	0℃ to 125℃			1.5	
	I_O=1mA to 40mA				0.1	

* Pulse testing techniques are used to maintain the junction temperature as close to the ambient temperature as possible. Thermal effects must be taken into account separately. All characteristics are measured with a 0.33uF capacitor across the input and a 0.1uF capacitor across the output.

** This specification applies only for dc power dissipation permitted by absolute maximum ratings.

S78L24 Electrical Characteristics

(V_I=32V, I_O=40 ㎃, T_J=0℃ ~ 125℃, Unless otherwise noted)

Parameter	Test Conditions*		S78L24			Unit
			Min.	Typ.	Max.	
Output Voltage**		25℃	23	24	25	V
	I_O=1mA to 40mA V_I=26.5V to 39V	0℃ to 125℃	22.8	24	25.2	
	I_O=1mA to 70mA		22.8	24	25.2	
Input regulation	V_I=26.5V to 39V	25℃		95	480	mV
	V_I=29V to 39V			78	400	
Ripple rejection	V_I=27.5V to 37.5V,f=120Hz	0℃ to 25℃	30	33		dB
Output regulation	I_O=1mA to 100mA	25℃		41	240	mV
	I_O=1mA to 40mA			28	120	
Output noise voltage	f=10Hz to 100KHz	25℃		97		uV
Dropout Voltage		25℃		1.7		V
Bias current		25℃		4.8	6.5	mA
		125℃			6	
Bias Current Change	V_I=28V to 39V	0℃ to 125℃			1.5	
	I_O=1mA to 40mA				0.1	

* Pulse testing techniques are used to maintain the junction temperature as close to the ambient temperature as possible. Thermal effects must be taken into account separately. All characteristics are measured with a 0.33uF capacitor across the input and a 0.1uF capacitor across the output.

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